Amendments to the Claims

This listing of claims will replace all prior versions, and listings of claims in the application:

Listing of Claims:

Claims 1-28 (Canceled)

Claim 29 (New): A cartridge for characterizing particles suspended in a liquid sample, comprising a housing with

connectors for operational connection to and disconnection from corresponding connectors of a docking station for establishment of electrical and fluid connections when the cartridge is received in the docking station,

a first mixing chamber and a first collection chamber separated by a wall containing a first orifice for the passage of the particles between the first mixing chamber and the first collection chamber,

first particle characterization means for characterizing particles passing through the first orifice,

a bore in the outer surface of the housing for entrance of the liquid sample, communicating with

a first sampling member positioned in the housing for sampling the liquid sample and having a first cavity for receiving and holding the liquid sample, the member being movably positioned in relation to the housing in such a way that, in a first position, the first cavity is in communication with the bore for entrance of the liquid sample into the first cavity, and, in a second position, the first cavity is in communication with the first mixing chamber for discharge of the liquid sample into the first mixing chamber whereby the sampling member operates to receive and hold a precise volume of liquid sample and to transfer the sample to the first mixing chamber.

Claim 30 (New): A cartridge according to claim 29, further comprising

a second mixing chamber and a second collection chamber separated by a second wall containing a second orifice for the passage of the particles between the second mixing chamber and the second collection chamber,

second particle characterization means for characterizing particles passing through the second orifice, and wherein

in the second position, the first cavity is in communication with the first mixing chamber for entrance of liquid from the first mixing chamber into the first cavity, and, in a third position, the first cavity is in communication with the second mixing chamber for discharge of the liquid in the first cavity into the second mixing chamber.

Claim 31 (New): A cartridge according to claim 29, further comprising

a second mixing chamber and a second collection chamber separated by a second wall containing a second orifice for the passage of the particles between the second mixing chamber and the second collection chamber,

second particle characterization means for characterizing particles passing through the second orifice, and

a second sampling member positioned in the housing for sampling a small and precise volume of liquid from the first mixing chamber and having a second cavity for receiving and holding the sampled liquid, the member being movably positioned in relation to the housing in such a way that, in a first position, the second cavity is in communication with the first mixing chamber for entrance of liquid from the first mixing chamber into the first cavity, and, in a second position, the second cavity is in communication with the second mixing chamber for discharge of the sampled liquid in the second cavity into the second mixing chamber.

Claim 32 (New): A cartridge according to claim 29, further comprising a reagent chamber positioned adjacent to the first mixing chamber for holding a reagent to be entered into the first mixing chamber.

Claim 33 (New): A cartridge according to claim 32, further comprising a breakable seal separating the reagent chamber from the first mixing chamber.

Claim 34 (New): A cartridge according to claim 29, wherein at least one of the first and second particle characterization means includes a first electrode in the respective one of the first and second mixing chamber and a second electrode in the respective one of the first and second collection chamber, each electrode being electrically connected to a respective terminal member accessible at the outer surface of the cartridge.

Claim 35 (New): A cartridge according to claim 29, wherein the housing further comprises a first liquid storage chamber for holding a liquid and that, in the second position of the first sampling member, communicates with the first cavity so that liquid can be discharged from the first liquid storage chamber through the first cavity of the first sampling member and into the first mixing chamber together with the liquid sample.

Claim 36 (New): A cartridge according to claim 29, wherein the housing further comprises a second liquid storage chamber for holding a liquid to be discharged from

the second liquid storage chamber through the respective one of the first and second cavity and into the second mixing chamber together with the sampled liquid.

Claim 37 (New): A cartridge according to claim 29, comprising volume metering means for determining the beginning and end of a period during which a predetermined volume of liquid has passed through at least one of the first and second orifice.

Claim 38 (New): A cartridge according to claim 37, wherein the volume metering means comprises a volume metering chamber with an input communicating with the respective collection chamber and an output, and wherein presence of liquid is detected at the input and at the output, respectively.

Claim 39 (New): A cartridge according to claim 38, wherein presence of liquid is detected with a secondary electrode positioned at the input and a further secondary electrode positioned at the output.

Claim 40 (New): A cartridge according to claim 38, wherein presence of liquid is detected optically.

Claim 41 (New): A cartridge according to claim 29, wherein each of the mixing chambers and the collection chambers has a transverse cross-sectional area at the level of the respective orifice which is substantially less than the transverse cross-sectional area of the respective chamber over a substantial part of the height of the chamber above the respective orifice.

Claim 42 (New): A cartridge according to claim 29, wherein the surface defining the first cavity of the first sampling member has an anti-coagulation reagent.

Claim 43 (New): A cartridge according to claim 29, wherein the first liquid storage chamber holds chemical reagents for modification of the blood sample.

Claim 44 (New): A cartridge according to claim 29, wherein a mixing member is positioned in at least one of the mixing chambers.

Claim 45 (New): A cartridge according to claim 44, wherein the mixing member is magnetic.

Claim 46 (New): A cartridge according to claim 29, further comprising a sensor for characterization of the liquid.

Claim 47 (New): A cartridge according to claim 46, wherein the sensor for characterization of the liquid is adapted for spectrophotometric characterization of the liquid.

Claim 48 (New): A cartridge according to claim 29, wherein the housing further comprises a pump chamber communicating with one of the first and second collection chambers and having a pump actuator for causing a liquid flow through the respective orifice.

Claim 49 (New): A cartridge according to claim 48, wherein the pump actuator is a piston.

Claim 50 (New): A cartridge according to claim 48, wherein the pump actuator is a membrane.

Claim 51 (New): A method of operating a particle characterization apparatus comprising a cartridge according to claim 29, the cartridge being demountable from the apparatus, the method comprising

sampling liquid containing particles with the cartridge through the bore with the first sampling member in its first position,

positioning the cartridge in the apparatus,

moving the first sampling member to its second position,

pumping liquid in the first storage chamber through the second cavity and into the first mixing chamber together with the liquid sample,

making particle characterizing measurements,

disconnecting the cartridge from the apparatus, and

discarding the cartridge.

Claim 52 (New): A method of operating a particle characterization apparatus comprising a cartridge according to claim 31, the cartridge being demountable from the apparatus, the method comprising

sampling liquid containing particles with the cartridge through the bore with the first sampling member in its first position,

positioning the cartridge in the apparatus,

moving the first sampling member to its second position,

pumping liquid in the first storage chamber through the first cavity and into the first mixing chamber together with the liquid sample,

sampling a liquid sample from the first mixing chamber with the second sampling member in its first position,

moving the second sampling member to its second position,

pumping liquid in the second storage chamber through the second cavity and into the second mixing chamber together with the liquid sample,

making particle characterizing measurements,

disconnecting the cartridge from the apparatus, and

discarding the cartridge.

Claim 53 (New): An apparatus for characterizing particles suspended in a liquid, comprising

a cartridge according to claim 29, and

a docking station for removably receiving the cartridge, comprising connectors for operational connection with the particle characterization means when the cartridge is received in the docking station.

Claim 54 (New): An apparatus according to claim 53, wherein

the cartridge further comprises a first port communicating with the first collection chamber for causing a liquid flow through the first orifice, and

the docking station further comprises a port for forming a gas connection with the with the cartridge port when the cartridge is received in the docking station for application of a pressure causing a liquid flow through the orifice.

Claim 55 (New): An apparatus according to claim 53, comprising a cartridge according to claim 53, the docking station further comprising connectors for operational connection with the second particle characterization means when the cartridge is received in the docking station.

Claim 56 (New): An apparatus according to claim 55, wherein

the cartridge further comprises a second port communicating with the second collection chamber for causing a liquid flow through the second orifice, and

the docking station further comprises a second port for forming a gas connection with the with the second cartridge port when the cartridge is received in the docking station for application of a pressure causing a liquid flow through the second orifice.